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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE



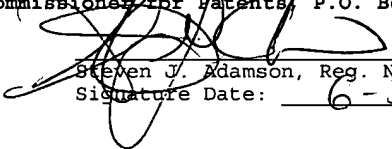
In re Application )  
Inventor(s): Kenneth N. Bates )  
Reissue Serial No.: 09/628,942 )  
Original Patent No.: 5,787,049 )  
Original Patent Issued: 07/28/98 )  
Reissue Filed: 07/28/00 )  
Title: Acoustic Wave Imaging )  
Apparatus and Method )

REISSUE  
PATENT APPLICATION

Art Unit: 3662  
Examiner: Lobo, I.

RECEIVED  
JUN 09 2003  
OFFICE OF PETITIONS

CERTIFICATE OF MAILING UNDER 37 C.F.R. § 1.8  
I hereby certify that this correspondence is being deposited in the United States Postal Service with sufficient postage as first class mail in an envelope addressed to Commissioner for Patents, P.O. Box 1450, Arlington, VA, 22313-1450 on 6-3-03.

  
Steven J. Adamson, Reg. No. 32,776  
Signature Date: 6-3-03 (Attorney Signature)

PETITION TO REVIVE UNAVOIDABLY ABANDONED APPLICATION

Mail Stop Petition  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir or Madam:

Applicant hereby petitions the Commissioner to revive the above-identified application. The delay in timely filing the appropriate reply was unavoidable.

Enclosed with this Petition are the following:

- x The required reply (though this reply was previously submitted);
- x Petition fee set forth in 37 C.F.R. §1.17(1); and
- x A showing that the entire delay in filing the required reply was unavoidable.

Showing of Unavoidability

A final Office Action was mailed in the instant case on October 2, 2002. On December 23, 2002, Applicant submitted a reply that placed all of the claims in condition for allowance.

06/09/2003 AWONDAF1 00000134 09628942

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The Examiner either did not notice (or perhaps did not read) the claim amendments to recognize that they indeed placed the case in condition for allowance. As a result, the Examiner issued an Advisory Action on January 16, 2003, rejecting some of the claims. On January 30, 2003, Applicant submitted a supplemental reply which did not amend any of the claims, but explained why the claims as originally submitted were allowable. On February 26, 2003, the Examiner issued a second Advisory Action that indicated that the claims as originally submitted were, in fact, allowable. (Note that this was an unnecessary two month delay on the part of the Patent Office.)

The second Advisory Action, however, requested submission of a supplemental paper that addressed the **form** of previously submitted amendments, stating that they did not comply with §1.173(b). Applicant was unsure of what the Examiner was requesting, having already submitted documents that appeared to comply with 37 C.F.R §1.173. Applicant then submitted a reply that contained multiple variations of the requested supplemental paper - evidencing confusion as to the format of the appropriate response. (An unexecuted copy of the Response that accompanied the multiple variations, which evidences this confusion, is enclosed.) On April 16, 2003 (14 days after expiration of the six month period for response), the Examiner issued a third Advisory Action indicating that the supplemental paper(s) still did not comply with §1.173(b). After a telephone conference with the Examiner, Applicant submitted, on April 28, 2003, papers that appear to comply with the §1.173(b). A copy of the April 28 papers are submitted herewith.

On May 5, 2003, the Patent Office issued a Notice of Abandonment from which this Petition ensues.

Applicant submits that the delay in responding was caused in part by a delay in the patent office (two month delay for not recognizing that the claims as amended were allowable - contained limitations from allowed claims) and in part by a good-faith misunderstanding as to the interpretation of §1.173 which the Examiner and the Applicant attempted to address and resolve in an

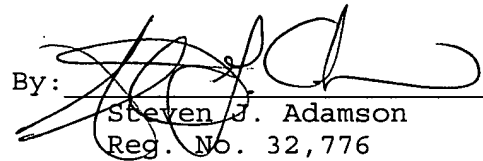
expeditious manner - eventually achieving that end, be it just outside the 6 month period.

Accordingly, Applicant respectfully requests that the delay in filing the appropriate reply in the circumstances of the present case was indeed unavoidable. Thank you for your time and consideration.

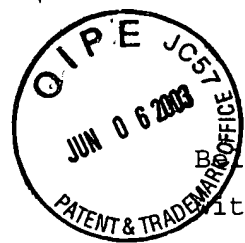
The Commissioner is authorized to charge any underpayment or credit any overpayment associated with this communication to Deposit Account No. 01-0272. A duplicate copy of this authorization is enclosed.

Respectfully submitted,

Date: 6-3-03

By:   
Steven J. Adamson  
Reg. No. 32,776

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Below please find reissue claims 24-40 underlined in their entirety, without bracketed deletions and with appropriate parenthetical expressions ("amended", "twice amended," etc.), pursuant to 37 CFR 1.173(b).

24 (twice amended). An acoustic energy transmitting apparatus, comprising:

a plurality of electro-acoustic transducer elements arranged in an M row by N column array, where M and N are positive integers and at least one of M and N is greater than one;

control circuit for propagating row and column control signals for each of said M rows and said N columns, each control signal having a frequency and a phase component; and

wherein each transducer element is configured to function as an active device so as to achieve a combining at each transducer element of the frequency and phase components of the row and column control signals for that transducer element in such a manner as to provide a focused acoustic signal at a given focal distance and direction from said array.

25. The apparatus of claim 24, wherein the electric signal to acoustic signal relationship and vice versa of each transducer element is non-linear.

26 (amended). The apparatus of claim 24, wherein said control circuit includes a control channel for each of said M rows and a control channel for each of said N columns, and wherein the number of control channels is fewer than the number of transducer elements.

27. The apparatus of claim 24, wherein said control circuit is configured such that the row and column signals for at least some of the transducer elements includes a coded signal.

28 (amended). The apparatus of claim 27, wherein M equals one.

29 (amended). An acoustic energy transmitting apparatus, comprising:

a plurality of electro-acoustic transducer elements arranged in an M row by N column array, where M and N are positive integers and at least one of M and N is greater than one;

M row control lines, each coupled to the transducer elements in one of said M rows;

N column control lines, each coupled to the transducer elements in one of said N columns;

control circuit for propagating row and column control signals for each of said M rows and said N columns, a control signal for each transducer element being a combination of one of said row control signals and one of said column control signals;

a plurality of active devices, each coupled to one of said transducer elements for combining the row control signal and the column control signal of that transducer element;

wherein said transducer elements, control circuit and active devices are configured so as to achieve a combining at each transducer element of the row and column control signals for that transducer element in such a manner as to provide a focused acoustic signal at a given focal distance and direction from said array; and

wherein each of said electro-acoustic transducer elements is configured within said apparatus to function in a non-linear manner in operation.

30 (twice amended). An acoustic energy receiving apparatus, comprising:

a plurality of electro-acoustic transducer elements arranged in an M row by N column array;

control circuit for propagating row and column control signals for each of said M rows and said N columns, each row and column control signal having a frequency and a phase component; and

wherein said transducer elements and said control circuit are configured so as to achieve a combining at each transducer element of the frequency and phase components of the row and column control signals for that transducer element with a resultant electrical receive signal, corresponding to an acoustic signal incident on that transducer element, in such a manner as to modify the frequency and phase of the transducer element's electrical receive signal so as to achieve the coherent

combination of the modified electrical receive signals from all of said plurality of transducer elements; and

a filter that filters spurious frequencies output from the transducer elements;

wherein said transducer elements, control circuit and filter are configured to achieve focused acoustic signal reception at a given distance and direction from said array.

31. The apparatus of claim 30, wherein said transducer elements and said control circuit are configured to achieve dynamic focused acoustic signal reception.

32. The apparatus of claim 31, wherein the electric signal to acoustic signal relationship and vice versa of each transducer element is non-linear.

33 (amended). The apparatus of claim 30, wherein said filter includes a matched filter.

34. The apparatus of claim 33, wherein said matched filter includes a conjugate of a coded signal.

35 (amended). The apparatus of claim 29, wherein M equals one.

36 (twice amended). The apparatus of claim 30, further comprising a circuit that generates image data from the coherent combination of transducer element receive signals.

37 (amended). The apparatus of claim 30, wherein said control circuit includes a control channel for each of said M rows and a control channel for each of said N columns, and wherein the number of control channels is fewer than the number of transducer elements.

38. An acoustic energy receiving apparatus, comprising:  
a plurality of electro-acoustic transducer elements each capable of generating an electrical receive signal in response to an incident

acoustic wave and arranged in an M row by N column array, where M and N are positive integers and at least one of M and N is greater than one;

control circuit for propagating row and column control signals for each of said M rows and said N columns, the control signal for each transducer element being a combination of the row and column control signals for that transducer element;

wherein said row and column control signals are configured, for each transducer element, such that when combined with the electrical receive signal of that transducer element the electrical receive signal is modified in such a manner as to permit the simultaneous processing of the modified electrical receive signals from said plurality of transducer elements;

a first circuit that combines the modified electrical receive signals of each of said transducer elements to form an array output signal; and

a second circuit coupled to said first circuit that generates image data from said array output signal.

39. The apparatus of claim 38, wherein M equals one.

40. The apparatus of claim 24, wherein each transducer element includes non-linear electro-acoustic material.



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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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|----------------------------------|---|---------------------------|
| Re Application                   | ) | <u>REISSUE</u>            |
|                                  | ) | <u>PATENT APPLICATION</u> |
| Inventor(s): Kenneth N. Bates    | ) |                           |
|                                  | ) |                           |
| Reissue Serial No.: 09/628,942   | ) | Art Unit: 3662            |
|                                  | ) |                           |
| Original Patent No.: 5,787,049   | ) | Examiner: Lobo, I.        |
|                                  | ) |                           |
| Original Patent Issued: 07/28/98 | ) |                           |
|                                  | ) |                           |
| Reissue Filed: 07/28/00          | ) |                           |
|                                  | ) |                           |
| Title: Acoustic Wave Imaging     | ) |                           |
| Apparatus and Method             | ) |                           |

CERTIFICATE OF MAILING UNDER 37 C.F.R. Section 1.8  
I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to Assistant Commissioner for Patents, Washington, DC 20231 on \_\_\_\_\_.

Steven J. Adamson, Reg. No. 32,776

Signature Date

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**JUN 09 2003**

RESPONSE TO OFFICE ACTION UNDER 37 C.F.R. §1.111

Assistant Commissioner for Patents  
Washington, DC 20231

**OFFICE OF PETITIONS**

Sir or Madam:

This RESPONSE is in reply to the Advisory Action mailed February 26, 2003.

REMARKS

Claims 1-23 (from the original patent) and claims 24-40 (added through reissue) are pending in the case. Applicant notes with appreciation the allowance of claims 24-38, but hereby brings to the Examiner's attention claims 39-40. Claims 39-40 were added by the Amendment submitted December 23, 2002, and depend from claims 38 and 24, respectively. Applicant submits that claims 24-40 should be allowable.

Response to Detailed Action

ITEM 1. In item 1, it is stated that ALL NEW CLAIMS (in this case claims 24-38 [sic, actually 24-40] must be underlined throughout the prosecution of a reissue application. Applicant is confused by this statement because §1.173 paragraph (d) requires matter added to a reissue be underlined, but if a claim added by a reissue is subsequently



amended and both the base claim and the matter added to that claim by amendment are underlined, then it is impossible from the face of the document to determine what matter has been added. Furthermore, if material being deleted (shown in brackets) was previously submitted in a new claim and thus must be underlined throughout prosecution, then the deleted material is underlined leading to a designation of text with conflicting editorial designations (underlined material within brackets).

In the Response mailed December 23, 2002, Applicant submitted separate sheets showing changes to claims 24, 28, 30 and 35. Submitted herewith are two modified versions of that same document. In the first version, the entire claim language is underlined, except for language in brackets. In the second version, the entire claim language is underlined, including language in brackets. Note that the text of claims 39 and 40, added by the December 23, 2002, Amendment (and underlined in that Amendment) is provided and underlined, as required by paragraphs (b) and (d), in both versions.

Note also that while Applicant is cautioned in the present Action to include the parenthetical expressions "amended," "twice amended," etc., behind the claim number, in both the December 23, 2002, Amendment and the Supplemental Paper Amending Reissue Application sent that same day, the requisite parenthetical expressions appear to be appropriately supplied. They are assuredly included in the first and second versions of amendments to claims 24, 28, 30 and 25 enclosed herewith.

ITEM 2. In Item 2, the Examiner refers to the instant amendment as apparently distinguished from the amendment filed December 30, 2002 (the Amendment mailed by the undersigned on December 23, 2002) in Item 1. It is not clear to what the "instant amendment" refers. Is it the December 23, 2002, Amendment? Is it the Response to Advisory Action mailed January 30, 2003? If it is the latter, which it apparently is, there were no changes made to the claims in that Response. Only Remarks were presented. Thus, the provisions of paragraph (c) should not apply, i.e., there was not "an amendment to the claims pursuant to paragraph (b) of this section."

If, however, it was the December 23, 2002, Amendment, a separate page complying with paragraph (c) was submitted at that time. A

duplicate copy of that page is submitted herewith. Note that paragraph (c) only requires an explanation of support for claims that were changed. For sake of completeness and to avert another Advisory Action, an additional separate page is provided herewith that indicates support in the disclosure (the original patent) for all claims added to or modified in the reissue application as of the date of this submission.

Also submitted herewith are supplemental pages showing all claim amendments in the reissue application made prior to the December 23, 2002, Amendment. They are provided in a first version where the added claims are not underlined to show additions and a second version where all the remaining text of the added claims is underlined.

ITEM 3. The objected to pages (4,5,7,8,10,13,14,16,17 and 18) are resubmitted herewith with appropriate margins.

In view of the foregoing Amendments and these Remarks, Applicant submits that claims 1-23 and 24-40 are in condition for allowance and early notification of same is respectfully requested. Should the Examiner believe that a telephone conference would help further the prosecution of this case, the Examiner is requested to contact the undersigned at the listed telephone number.

The Assistant Commissioner is hereby authorized to charge underpayment of any fees (including any filing fees under 37 C.F.R. \$1.16 for additional claims and any patent application processing fees under 37 C.F.R. \$1.17 including any fee for extension of time) associated with this communication or credit any overpayment to Deposit Account No. 01-0272. A duplicate copy of this authorization is enclosed.

Respectfully Submitted  
on behalf of Applicant,

Date: \_\_\_\_\_

\_\_\_\_\_  
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